WHAT IS CLAIMED IS:

1. An injection pump assembly in a chemical delivery system for simultaneously delivering reagents into a combinatorial reactor system having multiple reactors, comprising:

a plurality of injectors, each injector being in fluid communication with one of the multiple reactors, each injector having

a pump with a barrel in which a plunger sealingly moves to ingest, store and discharge a flushing solvent;

a pipette assembly for loading, storing, and discharging one or more reagents and the flushing solvent into one of the reactors in the combinatorial reactor system, the pipette assembly comprising

a passage

a first reservoir for retaining at least some of the reagents;

a second reservoir also for retaining at least some of the reagents, the passage being in fluid communication with each reservoir;

one or more hollow needles that extend along the passage for selectively delivering a reagent to the first or the second reservoir;

a first valve positioned downstream of the first reservoir;

a second valve positioned downstream of the second reservoir;

so that when each valve is in a closed position, the reagents can be stored in isolation from each other and when each valve is in an open position, the reagents and the flushing solvent may flow along the passage;

a 3-way valve positioned between the pump and the pipette assembly, the 3-way valve having

a first inlet port that receives the flushing solvent;

a second port connected to the pump for ducting the flushing solvent to and from the pump; and

a third port connected to the passage for ducting the flushing solvent from the pump; and

an actuator assembly in operable communication with each of the plurality of injectors so that the 3-way valves of each injector may be repositioned in unison, the first valves may be repositioned in unison, and the second valves may be repositioned in unison,

thereby delivering precise amounts of the flushing solvent and the reagents in varied or consistent amounts to each reactor in the combinatorial reactor system.

2. The injection pump assembly of claim 1 further including:

means for energizing the actuator assembly.

3. The injection pump assembly of claim 2 wherein the means for energizing the actuator assembly comprises a source of compressed air.

4. The injection pump assembly of claim 1 wherein the actuator assembly includes:

a 3-way valve linkage system in operable communication with each 3-way valve;

a second valve linkage system in operable communication with each second valve; and

a first valve linkage system which is in operable communication with each first valve.

5. The injection pump assembly of claim 4 wherein the 3-way valve linkage system may reposition the 3-way valves through 180°.

6. The injection pump assembly of claim 4 wherein the second valve linkage system may reposition the second valves through 90°.

7. The injection pump assembly of claim 4 wherein the first valve linkage system may move the first valves through 90°.

8. A method for simultaneously delivering reagents into a combinatorial reactor system having multiple reactors, comprising the steps of:

providing a plurality of injectors, each injector being in fluid communication with one of the multiple reactors, each injector having a pump with a plunger that sealingly moves to ingest, store and discharge a flushing solvent;

a pipette assembly for loading, storing, and discharging one or more reagents into the combinatorial reactor system, the pipette assembly comprising

a passage;

first and second reservoirs for retaining at least some of the reagents;

one or more hollow needles that extend along the passage for selectively delivering a reagent to the first or the second reservoir, each needle being positionable within the passage so that it may be in fluid communication with the first, the second or with neither reservoir;

a first and second valves respectively positioned downstream of the first and second reservoirs;

so that when each valve is in a closed position, the reagents can be stored in isolation from each other, and when each valve is in an open position, the reagents may flow along the passage;

positioning a 3-way valve between the pump and the pipette assembly;

deploying an actuator assembly in operable communication with each of the injectors so that the valves may be repositioned in unison, and

delivering precise amounts of the flushing solvent and the reagents in varied or consistent amounts to each reactor in the combinatorial reactor system.

9. The method of claim 8, further comprising the steps of:

(1) closing all valves except the second port of the 3-way valve;

(2) opening the first inlet port of the 3-way valve and operating the pump so that the flushing solvent at least partially fills the barrel of the pump;

(3) opening the second valve and delivering a first reagent into the first reservoir through one of the needles;

(4) withdrawing the needle so that its delivery end lies upstream of the second valve;

(5) closing the second valve and delivering a second reagent into the second reservoir through a second needle;

(6) closing the first inlet port of the 3-way valve;

(7) opening the third port of the 3-way valve;

(8) opening the first and second valves; and

(9) expelling the flushing solvent from the pump through the second and third ports, thereby urging the flushing solvent, the first reagent, and the second reagent from each injector.

10. The method of claim 8, further comprising the step of:

connecting an air cylinder to the actuator assembly so that the actuator assembly is energized thereby.

11. A delivery system for simultaneously delivering chemical reagents into a combinatorial reactor system having multiple reactors, comprising:

a plurality of injectors, each injector being in fluid communication with one of the multiple reactors, each injector having

a pump in which a plunger sealingly moves to ingest, store and discharge a flushing solvent;

a pipette assembly for loading, storing, and discharging one or more reagents into the combinatorial reactor system, the pipette assembly comprising

a first reservoir for retaining at least some of the reagents;

a second reservoir also for retaining at least some of the reagents;

a hollow needle for selectively delivering a reagent to the first or the second reservoir, the needle being positionable so that it may be in fluid communication with the first, the second or with neither reservoir;

a first valve positioned downstream of the first reservoir;

a second valve positioned downstream of the second reservoir;

so that when each valve is in a closed position, the reagents can be stored in isolation from each other, and when each valve is in an open position, the reagents may flow through the pipette assembly;

a 3-way valve located between the pump and the pipette assembly, the 3-way valve having

a first inlet port that receives the flushing solvent;

a second port connected to the pump; and

a third port connected to the passage; and

an actuator assembly in operable communication with each of the plurality of injectors so that

the 3-way valves of each injector may be repositioned in unison,

the first valves may be repositioned in unison independently of the 3-way valves and the second valves, and

the second valves may be repositioned in unison independently of the 3-way valves and the first valves,

so that precise amounts of the flushing solvent and the reagents may be discharged in synchrony in varied or consistent amounts to each reactor in the combinatorial reactor system.

12. The system of claim 11, further comprising:

a cylinder containing a pneumatic fluid operably communicated to the actuator assembly so that the actuator assembly is motivated thereby.

13. The system of claim 12, wherein the fluid comprises air.

14. The system of claim 12, wherein the fluid comprises a liquid.

15. The injection pump assembly of claim 7 wherein the actuator assembly includes:

a 3-way valve linkage system in operable communication with each 3-way valve;

a second valve linkage system in operable communication with each second valve; and

a first valve linkage system which is in operable communication with each first valve.

16. The injection pump assembly of claim 7 wherein the 3-way valve linkage system may reposition the 3-way valves through 180°.

17. The injection pump assembly of claim 7 wherein the second valve linkage system may reposition the second valves through 90°.

18. The injection pump assembly of claim 7 wherein the first valve linkage system may move the first valves through 90°.